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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,068	11/20/2003	Tetsushi Yamaguchi	43521-1200	8665

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EXAMINER	
PUNNOOSE, ROY M	
ART UNIT	**PAPER NUMBER**
2877	

DATE MAILED: 05/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

10

Office Action Summary	Application No.	Applicant(s)	
	10/718,068	YAMAGUCHI ET AL.	
	Examiner	Art Unit	
	Roy M. Punnoose	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-12* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-12* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 November 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *08/2005; 06/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Abstract

1. The abstract of the disclosure is objected to because it exceeds the limit of 150 words. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. Correction is required. See MPEP § 608.01(b).

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: The reference characters "LN" of Figures 1-3 are neither defined nor described in the specification. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the following claimed limitations must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

a. The "noise reducing section" of claim 1 (see line 7);

b. The "optical axis of the laser light" of claim 1 (see line 11);

c. The "optical axis" of claim 7 (see lines 9-10).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Note: For examination purposes, it was assumed that the section of the transparent cell where the laser light is incident on the surface of said cell at an angle is the "noise reducing section."

Claim Objections

4. Claim 1 is objected to because it is not clear from the recitation of "laser light" on lines 5 and 11 if they are referring to the "laser light" on line 2, or if they are different and independent laser lights. In Examiner's view, it would be more appropriate to state "the laser light" or "said laser light" in lines 5 and 11 to indicate that they are referring to the laser light of line 2. For examination purposes it was assumed that "laser light" of lines 5 and 11 are referring to the laser light of line 2.

5. Claims 4 and 5 are objected to because of the usage of "has " and "is" in the same sentence as presented is grammatically incorrect. Appropriate correction is required.

6. Claim 7 is objected to because the recitation "at an angle sufficiently offset" (see line 9) creates ambiguity with regard to the range of angles at which the cell could be positioned to detect scattered light from particles in the cell. Appropriate correction is required.

7. Claim 7 is objected to because it recites the limitation "the optical axis" in lines 9-10. There is insufficient antecedent basis for this limitation in the claim.

8. Claim 7 is objected to because from the recitation "the optical axis " (see lines 9-10) it is not clear if reference is being made to the optical axis of the laser light, or, if it refers to the optical axis of the transparent cell. For examination purposes it was assumed that it is referring to the optical axis of the irradiating laser light. Appropriate correction is required.

9. Claim 8 is objected to because the limitations of claim 8 are almost identical to that of claim 2 and therefore it is not clear if claim 8 was intended to depend on claim 1 or if it is an error. For examination purposes it was assumed that claim 8 is dependent on claim 7.

10. Claims 10 and 11 recites the limitation "laser light" on line 3 of each claim. Claims 10 and 11 are objected to for similar reasons of objection of claim 1 above.

11. Claims 2-6 and 8-12 are objected to because they are dependent on objected base claims.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Umezawa et al (JP 2002-221479) in view of Matsuda (US_6,465,802).

14. Claim 1 is rejected because:

A. Umezawa et al (Umezawa hereinafter) discloses an apparatus comprising a transparent cell 2 for containing a sample 4 containing particles 4a to be analyzed; a laser light irradiating section 14, 15, 16 for irradiating the sample 4 with laser light 15 from outside of the cell 2; a scattering light intensity detecting section 19, 20, 21 for detecting the intensity of light scattered from the particles 4a irradiated with laser light 15; a calculating section 23, 24, 25, 26 for calculating a particle size distribution of the particles 4a based on a fluctuation of the intensity of scattering light measured which occurs due to Brownian motions of the particles 4a (see Figure 1 and the citation of Umezawa prior art by the applicant on pages 1 and 2 of the instant application), said apparatus for measuring dynamically the particle size/diameter distribution of a sample under test so that the concentration of particle(s) of a

specific size or diameter can be determined for the purpose of controlling the concentration of the particle of a desired size in said sample.

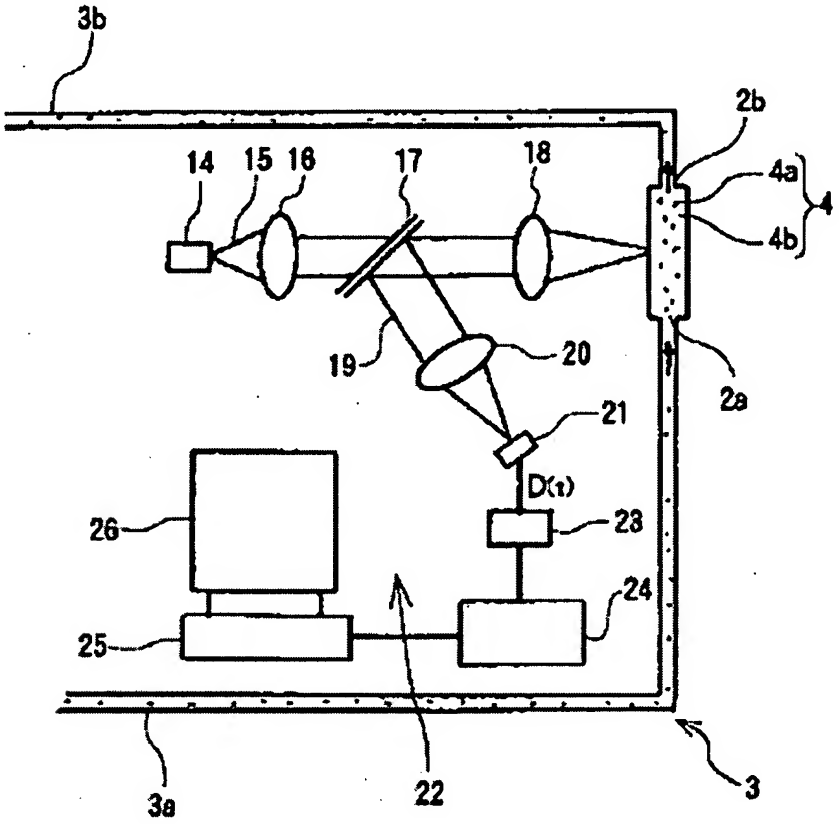


Figure 1, JP 2002-221479

B. However, Umezawa does not teach of a noise reducing section comprising a region to be irradiated with laser light of at least one of outside surface and inside surface of the cell, the region being inclined at a predetermined angle with respect to the optical axis of the laser light to prevent any noise-causing light reflecting back from the cell wall, in the reverse direction of the irradiating laser light source, in the apparatus for measuring dynamically the particle size/diameter distribution of a sample under test so that the concentration of particle(s) of a specific size or diameter can be determined for the purpose of controlling the concentration of the particle of a desired size in said sample.

C. Matsuda teaches of an apparatus (see Figure 1) comprising a flow-cell having a noise reducing region (see the region where the laser beam La is incident on the wall of the flow cell in Figure 2) comprising a region to be irradiated with laser light La of at least one of outside surface 5a and inside surface 5b of the flow cell 1, the region being inclined at a predetermined angle θ_1 with respect to the optical axis of the laser light La (see Figure 2) to prevent any noise-causing light reflecting back from the cell wall, in the reverse direction of the irradiating laser light La, said flow cell in an apparatus for obtaining particle information including particle diameter, the particles suspended in a fluid passing through said flow cell (see col.1, lines 8-13).

D. In view of Matsuda's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Matsuda's teaching of an apparatus comprising a flow-cell having a noise reducing region which is inclined at a predetermined angle with respect to the optical axis of the laser light into Umezawa's apparatus due to the fact that such an incorporation would improve the accuracy because of the reduction in noise due to the absence of the noise causing reflected light in the apparatus for measuring dynamically the particle size/diameter distribution of a sample under test so that the concentration of particle(s) of a specific size or diameter can be determined more accurately to better control the concentration of particles of a desired size in said sample.

15. Claim 2 is rejected for the same reasons of rejection of claim 1 above, and additionally because Umezawa teaches that scattering light intensity detecting section 19, 20, 21 is configured (see Figure 1) to measure the intensity of back scattering light which travels in reverse of a

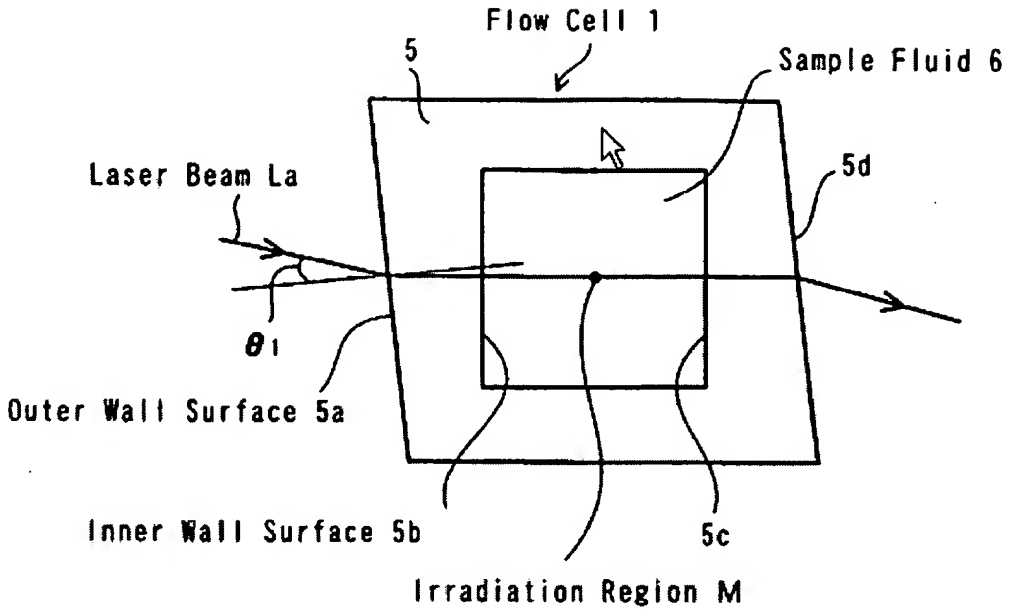
direction of irradiation of laser light on the sample (see page 2 of attached abstract of Umezawa et al, JP 2002-221479).

16. Claim 4 is rejected for the same reasons of rejection of claim 1 above, and additionally because:

A. Umezawa teaches all claim limitations as detailed above except for the transparent flow-cell 1 that has four walls with an incident and egressing wall for laser light transmission that is non-traverse to the optical axis of the laser light in the apparatus for measuring dynamically the particle size/diameter distribution of a sample under test so that the concentration of particle(s) of a specific size or diameter can be determined for the purpose of controlling the concentration of the particle of a desired size in said sample.

B. Matsuda teaches of a transparent flow-cell 1 that has four walls (see Figure 2) with an incident and egressing wall for laser light transmission that is non-traverse to the optical axis of the laser light (see col.4, lines 40-48) to prevent any noise-causing light reflecting back from the cell wall, in the reverse direction of the irradiating laser light La, said flow cell in an apparatus for obtaining particle information including particle diameter, the particles suspended in a fluid passing through said flow cell (see col.1, lines 8-13).

FIG. 2



C. In view of Matsuda's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Matsuda's teaching of a transparent flow-cell that has four walls with an incident and egressing wall for laser light transmission that is non-traverse to the optical axis of the laser light into Umezawa' apparatus due to the fact that it would provide an apparatus that will prevent any noise-causing light reflecting back from the cell wall, in the reverse direction of the irradiating laser light, to improve the accuracy of the apparatus by reducing noise and therefore improving the signal to noise ratio, for measuring dynamically the particle size/diameter distribution of a sample under test so that the concentration of particle(s) of a specific size or diameter can be determined more accurately to better control the concentration of particles of a desired size in said sample.

17. Claim 6 is rejected for the same reasons of rejection of claim 1 above, and additionally because:

A. Umezawa teaches all claim limitations as detailed above except that the outside surface and the inside surface cell are parallel, in the apparatus for measuring dynamically the particle size/diameter distribution of a sample under test so that the concentration of particle(s) of a specific size or diameter can be determined for the purpose of controlling the concentration of the particle of a desired size in said sample.

B. Matsuda discloses prior art teaching of a transparent flow-cell in which the outside surface 101a and the inside surface 101b of the cell are parallel (see col.1, lines 15-21 and Figure 8), said flow cell in an apparatus for obtaining particle information including particle diameter, the particles suspended in a fluid passing through said flow cell (see col.1, lines 8-13).

C. In view of Matsuda's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Matsuda's teaching of prior art transparent flow-cell in which the outside surface and the inside surface of the cell are parallel into Umezawa's apparatus due to the fact that such a combination would provide an apparatus that is lower overall cost because it is cheaper to fabricate a cell that has parallel and/or uniform sidewall surface.

18. Claim 7 is rejected for the same reasons of rejection of claim 1 as detailed above. In claim 7, with regard to the recitation "to reduce any scattered light from defects in the surfaces of the planar wall," the reduction of noise from scattered light from defects on the surface of the planar wall of the cell is a result and a benefit of directing the light at the cell wall surface at a predetermined angle that is greater than a perpendicular crossing the optical axis of the flow-cell.

This benefit is inherent in Matsuda's teaching because Matsuda's flow-cell has a noise-reducing region which is inclined at a predetermined angle with respect to the optical axis of the laser light to prevent any noise-causing light reflecting back from the cell wall.

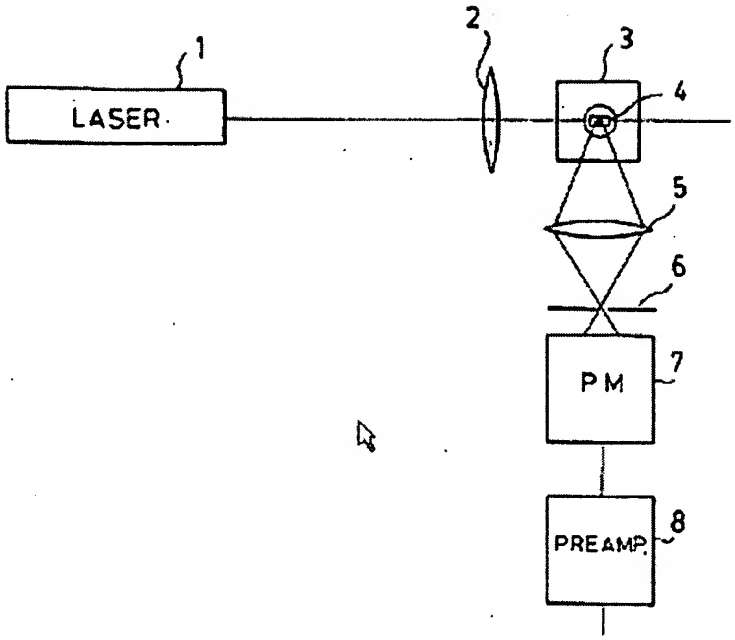
19. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Umezawa et al (JP 2002-221479) in view of Matsuda (US_6,465,802), and further in view of Furuya (US_5,172,004).

20. Claims 3 is rejected for the same reasons of rejection of claim 1 above and additionally because:

A. Umezawa and Matsuda teach all claim limitations as detailed above except for the explicit teaching that the noise reducing section further includes a shielding plate with a pinhole positioned between the transparent cell and the scattering light intensity detecting section in an apparatus for measuring dynamically the particle size/diameter distribution of a sample under test so that the concentration of particle(s) of a specific size or diameter can be determined for the purpose of controlling the concentration of the particle of a desired size in said sample.

B. Furuya teaches a shielding plate 6 with a slit positioned between the transparent cell and the scattering light intensity detecting section (see col.1, lines 55-60 and Figures 1 and 4) for blocking any undesired noise-light from becoming incident on the light intensity detecting section 7, to improve the signal to noise (S/N) ratio of the apparatus for measuring particle size/diameter distribution of a sample under test (see col.1, lines 7-15) so that the concentration of particle of a desired size in said sample can be determined with better precision.

FIG. 1



C. In view of Furuya's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Furuya's teaching of the use of a pinhole into Umezawa and Matsuda's apparatus due to the fact that the incorporation of a shielding plate with a small hole for blocking any undesired noise-light from becoming incident on the light intensity detecting section would considerably reduce any noise from becoming incident on the photodetecting section and therefore improve the accuracy of the apparatus for measuring particle size/diameter distribution of a sample under test so that the concentration of particle of a desired size in said sample can be determined with better precision.

Note: A pinhole as claimed in claims 3 and 9, and Furaya's slit, are functional equivalents because they both have the common function of blocking any undesired light from

reaching the detection section to reduce noise and thereby improve the measurement accuracy.

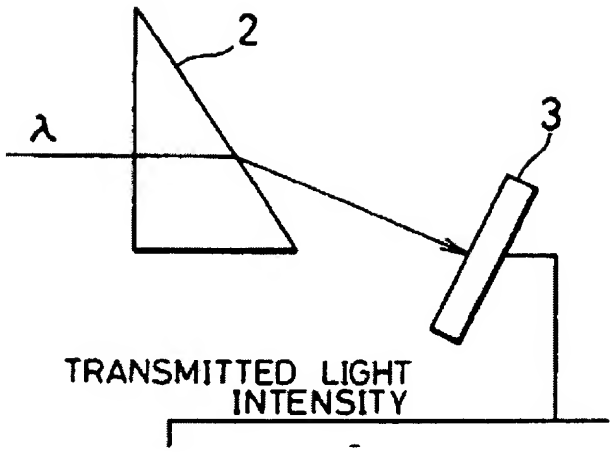
21. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Umezawa et al (JP 2002-221479) in view of Matsuda (US_6,465,802), and further in view of Kubo et al (US_5,696,580).

22. Claims 5 is rejected for the same reasons of rejection of claim 1 above and additionally because:

A. Umezawa and Matsuda teach all claim limitations as detailed above except for the explicit teaching that the transparent flow-cell has three walls with an incident and egressing wall for laser light transmission in the apparatus for measuring dynamically the particle size/diameter distribution of a sample under test so that the concentration of particle(s) of a specific size or diameter can be determined for the purpose of controlling the concentration of the particle of a desired size in said sample.

B. Kubo et al (Kubo hereinafter) teaches of a transparent fluid sample cell 2 comprising three walls (see col.4, lines 56-60) with an incident and egressing wall for laser light transmission (see Figure 1) in an apparatus for determining the component concentration, including samples having high scattering components in a fluid sample from the transmitted light intensity (see abstract; col.3, lines 65-67).

Fig. 1



C. In view of Kubo's teaching, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate Kubo's teaching of a transparent fluid sample cell that has three walls into Umezawa's apparatus due to the fact that a three-walled sample cell would require only a smaller volume/quantity of sample material, and thus would provide an improved apparatus with an enhanced capability to make concentration measurements with smaller volume/quantity of sample material.

23. Claim 8 is rejected for the same reasons of rejection of claims 1, 2 and 7 above because its limitations are similar to that of claim 2.

24. Claim 9 is rejected for the same reasons of rejection of claims 1, 3 and 7 above because its limitations are similar to that of claim 3.

25. Claim 10 is rejected for the same reasons of rejection of claims 1, 4 and 7 above because its limitations are similar to that of claim 4.

26. Claim 11 is rejected for the same reasons of rejection of claims 1, 5 and 7 above because its limitations are similar to that of claim 5.

27. Claim 12 is rejected for the same reasons of rejection of claims 1, 6 and 7 above because its limitations are similar to that of claim 6.

Contact/Status Information

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Roy M. Punnoose** whose telephone number is **571-272-2427.** The examiner can normally be reached on 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Gregory J. Toatley, Jr.** can be reached on **571-272-2800 ext.77.** The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300.**

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

May 01, 2006

Roy M. Punnoose
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Art Unit 2877